IS 12405 (1988): Gear Type Flexible Couplings [PGD 31: Bolts, Nuts and Fasteners Accessories]

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(Reaffirmed 2006)

Indian Standard

SPECIFICATION FOR GEAR TYPE FLEXIBLE COUPLINGS

[Transmission Devices Sectional Committee, EDC 44; Couplings Subcommittee, EDC 44 : 7 [Ref : Doc : EDC 44 (1503)]

1. Scope — Covers general requirements of gear type flexible couplings used for connecting two shaft ends for power transmission.

2. Classification — The couplings specified in this standard are classified into two types, namely, Type A with both the hubs flexible having integral sealing (O-rings) arrangements (*see* Table 1) and Type B with detachable sealing arrangement (*see* Tables 2 and 3).

3. Ratings and Dimensions — The ratings, dimensions and other requirements of the couplings shall be given in Table 1 for Type A and Tables 2 and 3 for Type B couplings. Manufacturers shall provide the service factor table for selecting the suitable couplings for different applications.

4. Materials and Construction

4.1 The toothed hubs and sleeves (or casings) shall be made of steel conforming to 45C8 of IS : 1570 (Part 2)-1979 'Schedules for wrought steels for general engineering purposes: Part 2 Carbon steels (unalloyed steels)', alternatively sleeves can be made of cast steel conforming to grade 23-45 of IS : 1030-1982 'Specification for carbon steel casting for general engineering purposes (*third revision*)' and shall be heat treated to a hardness *HB* 240-280.

4.2 The bolts shall be made of steel conforming to C45 of IS : 1570 (Part 2)-1979 and suitably hardened, and nuts shall conform to property class 4 of IS : 1367 (Part 6)-1980 'Technical supply conditions for threaded steel fasteners: Part 6 Mechanical properties and test methods for nuts with specified proof loads (*second revision*)'.

4.3 The gear tooths shall be cut by module cutters only. The tooth characteristics including crowning/ barreling shall be as agreed to between the supplier and the user.

5. Sealing

5.1 The sealing arrangement for the couplings shall be integral with the sleeve (casing) or alternative arrangement shall be made as agreed to between the supplier and the user.

5.2 Arrangement of sealing such as O-ring which can withstand high degree of temperature up to 120°C or felt conforming to IS : 1719-1979 'Specification for wool felt (pressed) (*second revision*)' or other sealing as lin seals, etc, shall be optional, subject to agreement between the supplier and the user.

5.3 Figure 1 shows the schematic sealing arrangements of couplings.

6. Lubrication

6.1 Provision shall be made for easy filling and discharge of the lubricant with plug suitably located.

6.2 For application, where ambient temperature is within 80°C, a calcium base EP type grease is recommended and for temperature above 80°C oil should be used.

6.3 The manufacturer shall indicate the quantity of lubricant to be used in each size of coupling.

7. Balancing — As the couplings are machined all over, generally it is not necessary to do balancing. For specific application, however, an agreement between the supplier and the user can be made.

8. Marking

8.1 The coupling shall be marked with the following details on the periphery of the casing:

a) Manufacturer's name or trade-mark;
b) Type and coupling number as specified in Tables 1 and 2; and
c) Designation of this standard.

8.2 *Standard Marking* — Details available with the Bureau of Indian Standards.

9. Packing — The coupling shall be suitably packed in wooden boxes to prevent damage during transit.

Adopted 5 May 1988 Gr 3

BUREAU OF INDIAN STANDARDS
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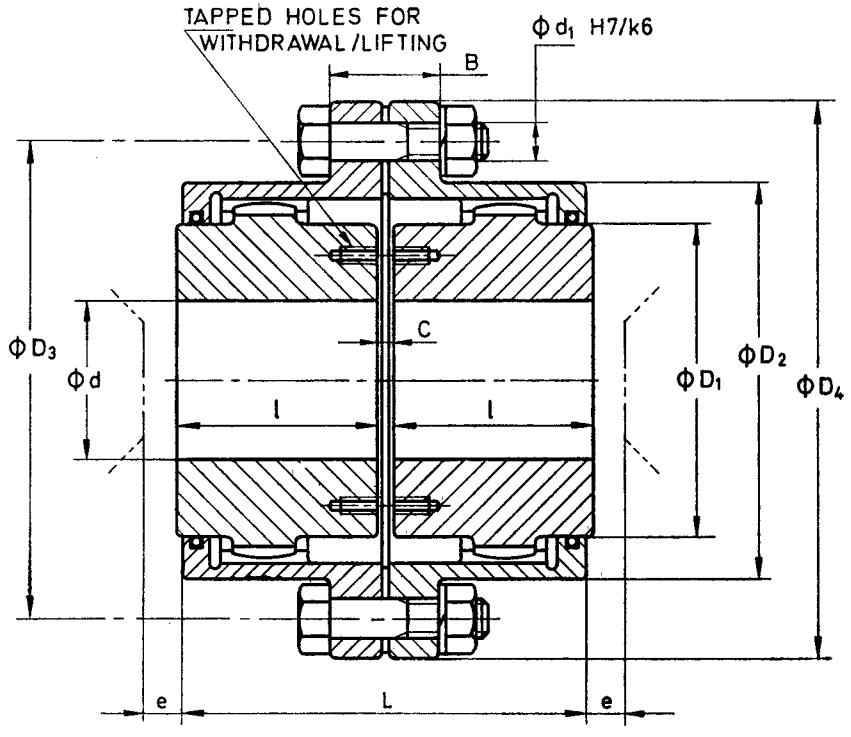
TABLE 1 RATINGS AND DIMENSIONS OF GEAR TYPE FLEXIBLE COUPLINGS, TYPE A

(*Clauses* 2, 3 *and* 8.1)

All dimensions in millimetres.



Coupling No.	kW per 100 rpm	Maximum Torque in Nm	Maximum rpm	d		D_1	D_2	D_3	D_4	L	B	l	C	Required End Clearance e	Dia of Pilot Bore	Fit Bolts d_1	Approx Mass in kg*	Approx †GD^2 Value in $kg.m^2$
				From	To													
1	8·9	707	6 300	20	50	70	110	140	170	115	34	55	2·5	25	15	8 M10×50	9·5	0·12
2	17·50	1 671	5 000	30	60	85	135	160	190	145	34	70	2·5	25	25	10 M10×50	14·4	0·21
3	39·4	3 763	4 000	40	70	100	155	190	220	175	40	85	2·5	25	35	8 M12×60	24·2	0·42
4	70·5	6 733	3 350	50	80	115	175	220	250	215	40	105	2·5	25	40	10 M12×60	39	0·90
5	102·0	9 741	2 800	60	100	140	215	255	290	240	50	115	5	28	45	12 M12×60	50	1·85
6	148·0	14 134	2 500	70	120	170	240	285	330	260	50	125	5	28	60	8 M16×75	80	3·00
7	236·0	22 538	2 120	80	130	185	260	305	350	290	50	140	5	30	75	12 M16×75	115	5·05
8	293·0	27 982	1 900	95	150	210	290	335	380	330	50	160	5	30	90	16 M16×75	175	8·3
9	375·5	35 813	1 700	110	170	240	330	380	430	350	50	170	5	35	100	10 M20×80	200	14·8
10	625·0	59 688	1 400	130	200	280	390	440	490	390	50	190	5	40	115	12 M20×80	280	30·0
11	888·0	84 804	1 250	140	240	340	445	500	545	450	60	220	5	40	125	14 M20×90	475	56·5
12	1 248·0	119 184	1 120	160	280	390	490	540	590	510	60	250	5	40	135	16 M20×90	625	85
13	1 718·0	164 070	1 000	180	300	420	555	620	680	535	70	260	7·5	40	170	14 M30×110	759	160
14	2 288·0	218 504	900	230	320	430	610	670	730	575	70	290	7·5	45	220	16 M30×110	943	215
15	2 860·0	273 130	800	270	360	480	660	720	780	655	70	320	7·5	45	260	18 M30×110	1 282	325
16	4 312·0	411 796	710	310	400	530	755	830	900	720	90	350	10	45	300	18 M36×130	1 720	600
17	6 424·0	613 492	630	350	450	630	855	930	1 000	820	90	400	10	50	340	20 M36×130	2 350	1 140
18	8 640·0	825 120	560	380	500	710	950	1030	1 100	920	110	450	10	60	370	20 M36×150	3 345	1 600
19	11 440·0	1 092 520	500	420	560	800	1 050	1 150	1 250	1 000	110	485	15	60	410	22 M48×160	4 340	2 700

Note — Illustrative figure is for guidance only.

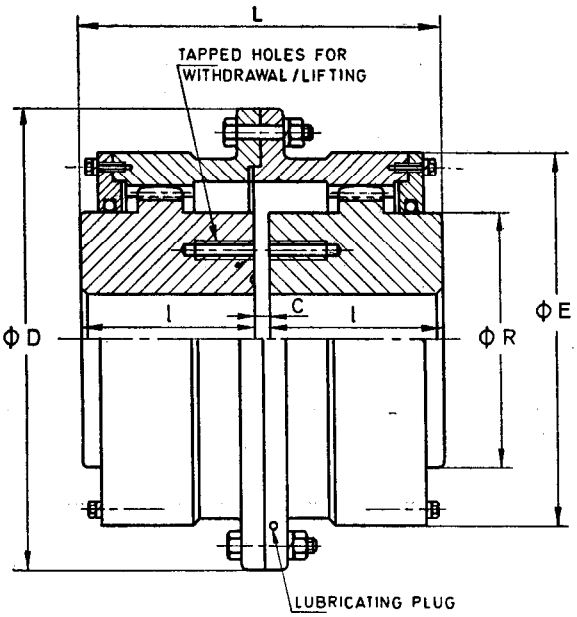
*Dimensions, tolerances, etc as per IS : 3640-1982 'Hexagon fit bolts (*first revision*)'.

†GD^2 value is the measure of polar moment of inertia of the couplings. It is utilised for checking up the flywheel effect of the coupling on the prime-mover during its selection for any application.

TABLE 2 DIMENSIONS OF GEAR TYPE FLEXIBLE COUPLINGS, TYPE B

(*Clauses* 2, 3 *and* 8.1)

All dimensions in millimetres.



Coupling No.	Maximum		Maximum rpm	Finish Bore		*D*	*L*	*l*	*E*	*C*	*R*	Pitch Circle Diameter	No. of Bolt Holes	Bolt Size
	kW per 100 rpm	Torque Nm		*Max*	*Min*									
1	7·4	707	7 000	15	40	160	125	60	123	5	60	126	12	M10×35
2	14·5	1 385	6 000	28	50	183	145	70	145	5	75	147	14	M10×40
3	32·8	3 132	5 300	30	60	215	166	80	165	6	90	175	14	M10×45
4	58·5	5 587	4 900	32	70	230	186	90	183	6	100	190	14	M10×45
5	80	7 640	4 300	35	80	265	206	100	204	6	120	215	14	M10×55
6	104	9 932	3 900	40	90	290	228	110	230	8	130	246	14	M12×60
7	149	14 230	3 800	58	100	300	248	120	250	8	140	252	14	M14×70
8	195	1 8620	3 450	68	110	330	268	130	270	8	155	252	14	M16×75
9	297	28 364	3 200	78	125	355	310	150	305	10	175	300	14	M16×80
10	405	38 678	2 750	88	140	410	340	165	335	10	200	352	14	M18×85
11	595	56 823	2 450	125	160	460	392	190	360	12	230	402	16	M18×90
12	620	59 210	2 200	145	180	505	452	220	425	12	260	443	16	M20×95
13	1 160	110 780	2 000	160	200	570	504	245	473	14	290	504	16	M22×100
14	1 562	149 171	1 800	185	220	610	556	270	520	16	325	536	16	M24×105
15	3 200	305 600	1 400	245	280	785	702	340	670	22	415	703	24	M30×115
16	6 060	578 730	950	260	350	960	830	400	840	30	590	875	18	M42×170
17	6 780	647 490	875	340	400	1 070	890	430	915	30	650	980	24	M48×180

Note 1 — Illustrative figure is for guidance only.

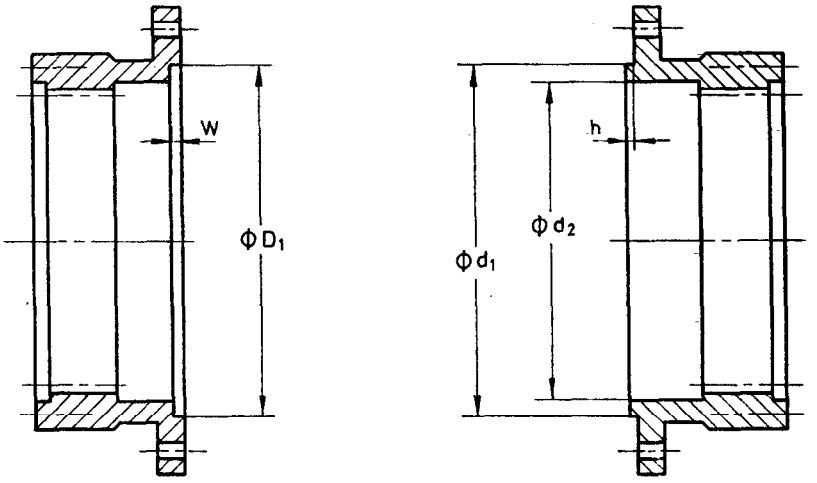
Note 2 — Pilot bore shall be 5 mm less than the minimum finished bore.

Note 3 — For dimensions of spigot, refer Table 3.

TABLE 3 DIMENSIONS OF SPIGOT

(*Clauses* 2 *and* 3)

All dimensions in millimetres.



Coupling No.	D_1 H7	W	d_1 n6	d_2	h
1	90	6	90	84	4
2	110	6	110	104	4
3	129	6	129	123	4
4	150	6	150	139	4
5	164	6	164	156	4
6	182	6	182	174	4
7	197	6	197	189	4
8	216	6	216	208	4
9	248	6	248	234	4
10	268	6	268	260	4
11	308	6	308	300	4
12	344	6	344	336	4
13	383	6	383	375	4
14	423	6	423	415	4
15	536	6	536	528	4
16	598	6	598	590	4
17	780	6	780	770	4

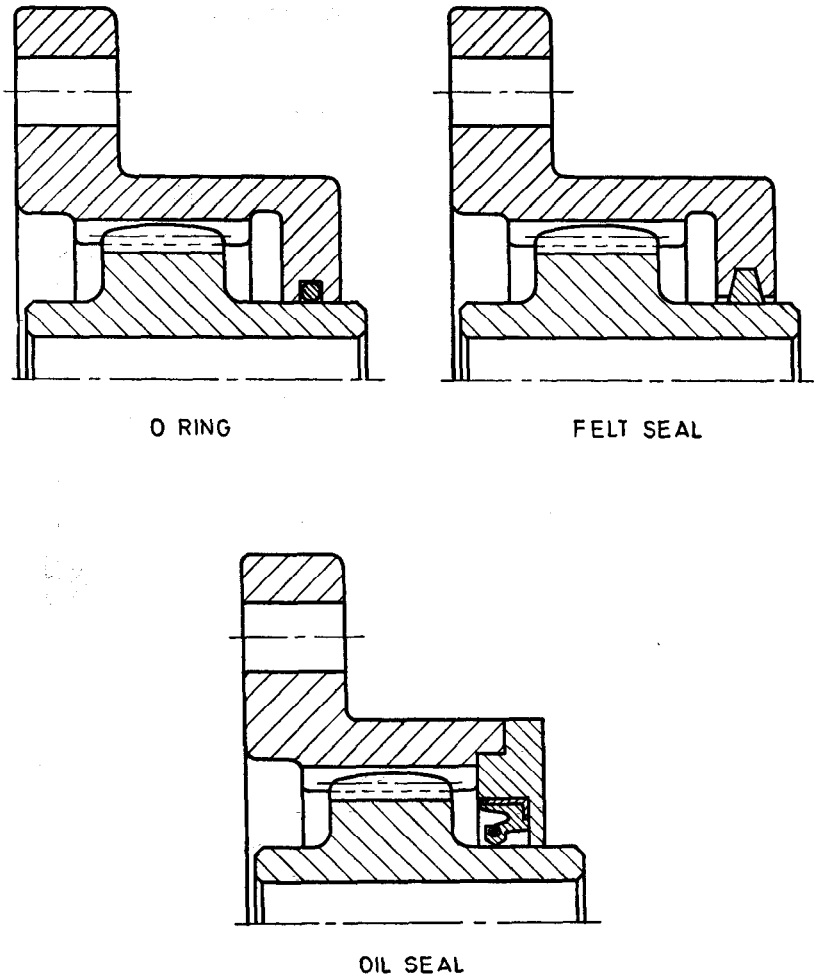


FIG. 1 SCHEMATIC SEALING ARRANGEMENTS OF COUPLINGS

EXPLANATORY NOTE

This standard has been prepared in the light of the present technical practices followed in India.

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